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(54) Title: MINIMIZATION OF LIGAND DEGRADATION PRODUCTS, OF REVERSION OF SAME TO USEFUL PHOSPHINE LIGANDS

(57) Abstract: A process for the minimization of phosphonium ion ligand degradation products formed during reaction of a polyunsaturated olefin or an unconjugated functionalized olefin in the presence of a transition metal-triorganophosphine ligand complex catalyst to form as a product, by-product, or intermediate product a conjugated functionalized olefin having a carbon-carbon double bond conjugated to an a-electronwithdrawing group, such as, an a,ß-unsaturated aldehyde, ketone, ester, acid, or nitrile. The minimization process involves conducting the reaction under selected conditions of conversion, temperature, pressure, or a combination thereof; and/or by selecting a triorganophosphine ligand with a specified steric and/or electronic property. Further, a process for reversion of phosphonium ion ligand degradation product(s) back to useful triorganophosphine ligand(s), the reversion involving treating a reaction product fluid containing the degradation product(s) with an inert gas, hydrogen, synthesis gas, or a mixture thereof under conditions sufficient to regenerate the triorganophosphine ligand(s).